

FLASH FLOATING GATE USING EPITAXIAL OVERGROWTH

ABSTRACT

A flash memory device comprising an epitaxial silicon floating gate containing conductive ions and overlying a tunnel oxide material; an inner-dielectric material overlying the epitaxial silicon floating gate, a polycide material overlying the inner-dielectric material, the tunnel oxide material, the epitaxial silicon floating gate, the inner-dielectric material and the polycide material forming a transistor gate, and source and drain electrodes on opposing sides of the transistor gate. A method for forming a flash memory device comprises forming a tunnel oxide with openings therein to expose underlying silicon forming a conductively doped epitaxial silicon layer over the tunnel oxide, forming an inner-dielectric layer over the epitaxial silicon layer, forming a polycide layer over the inner-dielectric layer; forming transistor gates from the polycide layer, the inner-dielectric layer, the epitaxial silicon layer and the tunnel oxide, and forming source and drain electrodes on opposing sides of the transistor gates.